

Notice of Allowability

Application No.

10/731,989

Examiner

William C. Choi

Applicant(s)

SAMPSELL ET AL.

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 5/20/2006.
2. ☒ The allowed claim(s) is/are 1-26,32 and 33.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |


RICKY MACK
SUPERVISORY PATENT EXAMINER

All claims pending thus being allowable, prosecution on the merits is closed in this application. A statement of the examiner's reasons for allowance is provided in the paragraphs, which follow below.

REASONS FOR ALLOWANCE

Claims 1-26, 32 and 33 are allowed.

The instant application is deemed to be directed to a nonobvious improvement over the invention of Miles et al (U.S. 6,680,792 B2), as being a representative example in the art to which the instant invention pertains. In particular, said improvement provides a modulator architecture with a more complex pixel structure.

More specifically, independent claim 1 is drawn to a light modulator comprising an array comprised of rows and columns of interferometric display elements, each divided into sub-rows of sub-elements as claimed, specifically comprising sub-array connection lines electrically connected to each array connection line, and switches to transmit the operating signals from each array connection line to the sub-rows to effect gray scale modulation (Claim 1, lines 6-9).

Similarly, independent claim 8 is drawn to a method of manufacturing an interferometric light modulator comprising providing an array of interferometric display elements arranged in rows and columns as claimed, specifically wherein each element comprises a predetermined number of sub-rows depending upon a desired bit-depth for a display and a predetermined number of sub-columns corresponding to a desired number of colors for the display (Claim 8, lines 5-10).

Independent claim 14 is drawn to a light modulator comprising an array of interferometric display elements arranged in rows and columns comprising an array connection line electrically connected to a sub-element in each display element as claimed, specifically wherein at least one sub-element is configured to selectively form an electrical connection connecting said array connection line to at least one other sub-element (Claim 14, lines 9-10).

Independent claim 15 is drawn to a light modulator comprising an array of interferometric display elements arranged in rows and columns comprising sub-elements as claimed, specifically comprising a predetermined number of sub-element cascades within each display element, wherein the predetermined number corresponds to the number of colors in the element (Claim 15, lines 11-13).

Independent claim 16 is drawn to a light modulator comprising an array of interferometric display elements arranged in rows and columns comprising sub-elements as claimed, specifically comprising addressing circuitry to provide an addressing pulse to each sub-element cascade, wherein a number of sub-elements in the cascade that become active depends upon a length of the addressing pulse (Claim 16, lines 11-13).

Independent claim 17 is drawn to a method of manufacturing a light modulator comprising providing an array of interferometric display elements, each comprising at least one sub-element cascade as claimed, specifically such that at least one sub-element is configured to selectively form an electrical connection connecting said array connection line to at least one other sub-element and electrically connecting a first

element in each sub-element cascade in a row to a corresponding connection line for that row (Claim 17, lines 4-8).

Independent claim 18 is drawn to a method of manufacturing a light modulator comprising providing an array of interferometric display elements arranged in rows and columns as claimed, specifically comprising providing an array of interferometric elements having at least one sub-element cascade further comprising providing a sub-element cascade for each of a desired color comprising a predetermined number of sub-elements (Claim 18, lines 3-4).

Independent claim 20 is drawn to a light modulator comprising an array of interferometric elements, each comprising a pre-determined number of sub-elements as claimed, specifically wherein each sub-element comprises a single movable layer having a surface area corresponding to a different binary weight of display information and wherein the number of sub-elements depends upon a desired bit depth (Claim 20, lines 3-5).

Independent claim 23 is drawn to a light modulator comprising an array of interferometric elements, each comprising a pre-determined number of sub-elements as claimed, specifically wherein one or more of the sub-elements are of a different size corresponding to a different binary weight of display information, wherein the number of sub-elements depend upon a desired bit depth and one connection line for each display element and a set of switches electrically connected between the display element and the sub-elements (Claim 23, lines 3-7).

Finally, independent claim 24 is drawn to a method of manufacturing a light modulator comprising providing an array of interferometric display elements and forming sub-elements within each display element of a size approximately equal to one half the display element as claimed, specifically further comprising forming additional sub-elements, each having a movable layer having a surface area approximately equal to half the surface area of the next largest movable layer of another sub-element (Claim 24, lines 6-8).

The prior art taken either singly or in combination fails to anticipate or fairly suggest the limitations of applicant's independent claims, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The claimed invention is therefore considered to be in condition for allowance as being novel and nonobvious over prior art.

OTHER REMARKS/INFORMATION

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C. Choi whose telephone number is (571) 272-2324. The examiner can normally be reached on Monday-Friday from about 9:00 am to 6 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on (571) 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W.C.
William Choi
Patent Examiner
Art Unit 2873
August 20, 2006


RICKY MACK
SUPERVISORY PATENT EXAMINER